# United States Department of the Interior

FISH AND WILDLIFE SERVICE
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December 17, 2013

To: Interested Parties

From: Josh Gruber, Fish Biologist, Red Bluff Fish and Wildlife Office

Subject: Biweekly report (December 3, 2013 - December 16, 2013)

Please find attached preliminary daily estimates of passage, 90% confidence intervals, and fork length ranges of juvenile salmonids sampled at Red Bluff Diversion Dam for the period December 3, 2013 through December 16, 2013. Race designation was assigned using length-at-date criteria.

Passage estimates for October 1 through October 17, 2013 (federal government shutdown period) have now been generated and added to the brood-year totals and confidence intervals. Daily passage for this un-sampled period was interpolated using a monthly mean daily passage estimate calculated from data collected October 18 through October 31, 2013. Broad Year totals may vary slightly between tabular and figure tables due to the method used to calculate confidence intervals. Variations are slight and we are currently working on the code to correct the problem.

This report also contains graphical displays of salmonid passage dating back to 2006 for comparison.

Please note that data contained in these reports is subject to revision as this data is preliminary and undergoing QA/QC procedures.

If you have any questions, please feel free to contact me at (530) 527-3043 ext 233.

Table 1.— Preliminary estimates of passage by brood-year (BY) and run for unmarked juvenile Chinook salmon and steelhead trout captured by rotary-screw traps at Red Bluff Diversion Dam (RK391), Sacramento River, CA, for the dates listed below. Results include estimated passage, peak river discharge volume, water temperature, turbidity, and fork length (mm) range in parentheses. A dash (-) indicates that sampling was not conducted on that date.

| | | | | Estimated passage | | | | |
|---|---|---|---|---|---|---|---|---|
| Date | Discharge volume (cfs) [1] | Water temperature (°C) | Water turbidity (NTU) | BY13 Winter | BY13 Spring | BY13 Fall | BY13 Late-Fall | BY13 RBT |
| 12/3/2013 | 4,150 | 10.7 | 1.8 | 2,069 (47 – 87) | 1,883 (35 – 42) | 1,539 (32 – 34) | 381 (95 – 121) | 0 ( – ) |
| 12/4/2013 | 4,530 | 9.1 | – | – | – | – | – | – |
| 12/5/2013 | 4,500 | 8.1 | 1.4 | 10,039 (47 – 87) | 2,158 (35 – 45) | 3,074 (30 – 34) | 1,311 (94 – 159) | 21 (105) |
| 12/6/2013 | 4,500 | 7.8 | 1.7 | 13,687 (47 – 93) | 6,205 (35 – 46) | 4,492 (30 – 34) | 3,191 (100 – 170) | 21 (190) |
| 12/7/2013 | 4,610 | 8.1 | – | – | – | – | – | – |
| 12/8/2013 | 4,550 | 7.8 | 1.5 | 24,459 (49 – 93) | 2,382 (36 – 47) | 5,020 (30 – 35) | 2,667 (97 – 161) | 82 (100 – 141) |
| 12/9/2013 | 4,530 | 7.4 | 1.8 | 19,132 (48 – 94) | 1,581 (36 – 39) | 3,061 (32 – 35) | 2,876 (96 – 140) | 62 (77 – 140) |
| 12/10/2013 | 4,470 | 7.6 | 1.6 | 18,551 (49 – 95) | 3,822 (36 – 39) | 7,249 (32 – 35) | 3,805 (99 – 126) | 44 (145 – 148) |
| 12/11/2013 | 4,500 | 8.2 | 1.5 | 14,009 (49 – 97) | 4,772 (36 – 48) | 10,750 (31 – 35) | 4,061 (98 – 153) | 97 (82 – 156) |
| 12/12/2013 | 4,550 | 8.6 | 1.6 | 15,574 (49 – 97) | 3,236 (36 – 47) | 9,963 (30 – 36) | 3,208 (98 – 130) | 0 ( – ) |
| 12/13/2013 | 4,500 | 8.7 | 1.6 | 9,043 (50 – 98) | 2,433 (37 – 47) | 9,850 (31 – 36) | 2,278 (100 – 124) | 0 ( – ) |
| 12/14/2013 | 4,530 | 8.9 | 1.5 | 7,715 (50 – 99) | 2,249 (37 – 49) | 7,700 (32 – 36) | 2,835 (100 – 179) | 40 (193) |
| 12/15/2013 | 4,500 | 9.1 | 1.9 | 5,203 (51 – 99) | 2,251 (37 – 48) | 6,492 (32 – 36) | 2,092 (100 – 176) | 42 (83) |
| 12/16/2013 | 4,530 | 9.3 | 1.5 | 1,852 (53 – 98) | 1,253 (38 – 50) | 8,265 (31 – 37) | 1,019 (102 – 179) | 33 (92) |
| **Biweekly Total [2]** | | | | **169,087** | **39,909** | **84,329** | **33,894** | **516** |
| *Biweekly Lower 90% Confidence Interval* | | | | 118,934 | 27,783 | 63,809 | 24,320 | 127 |
| *Biweekly Upper 90% Confidence Interval* | | | | 219,241 | 52,034 | 104,850 | 43,468 | 906 |
| **Brood Year Total** | | | | **1,556,620** | **113,965** | **86,908** | **138,085** | **164,811** |
| *Brood year Lower 90% Confidence Interval* | | | | 1,123,301 | 82,891 | 65,351 | 85,513 | 92,042 |
| *Brood year Upper 90% Confidence Interval* | | | | 1,989,940 | 145,039 | 108,466 | 190,658 | 237,580 |

[1] Peak daily discharge values do not account for diversions at RBDD and only represent peak flows registered at the Bend Bridge Gauging station (http://cdec2.water.ca.gov/cgi-progs/queryFx?bnd).

[2] Biweekly totals may be greater than the sum of the daily estimates presented in this table if sampling was not conducted on each day of the biweekly period. A dash (-) denotes those dates. To estimate daily passage for days that were not sampled, we impute missed sample days with the weekly mean value of days sampled within the week.

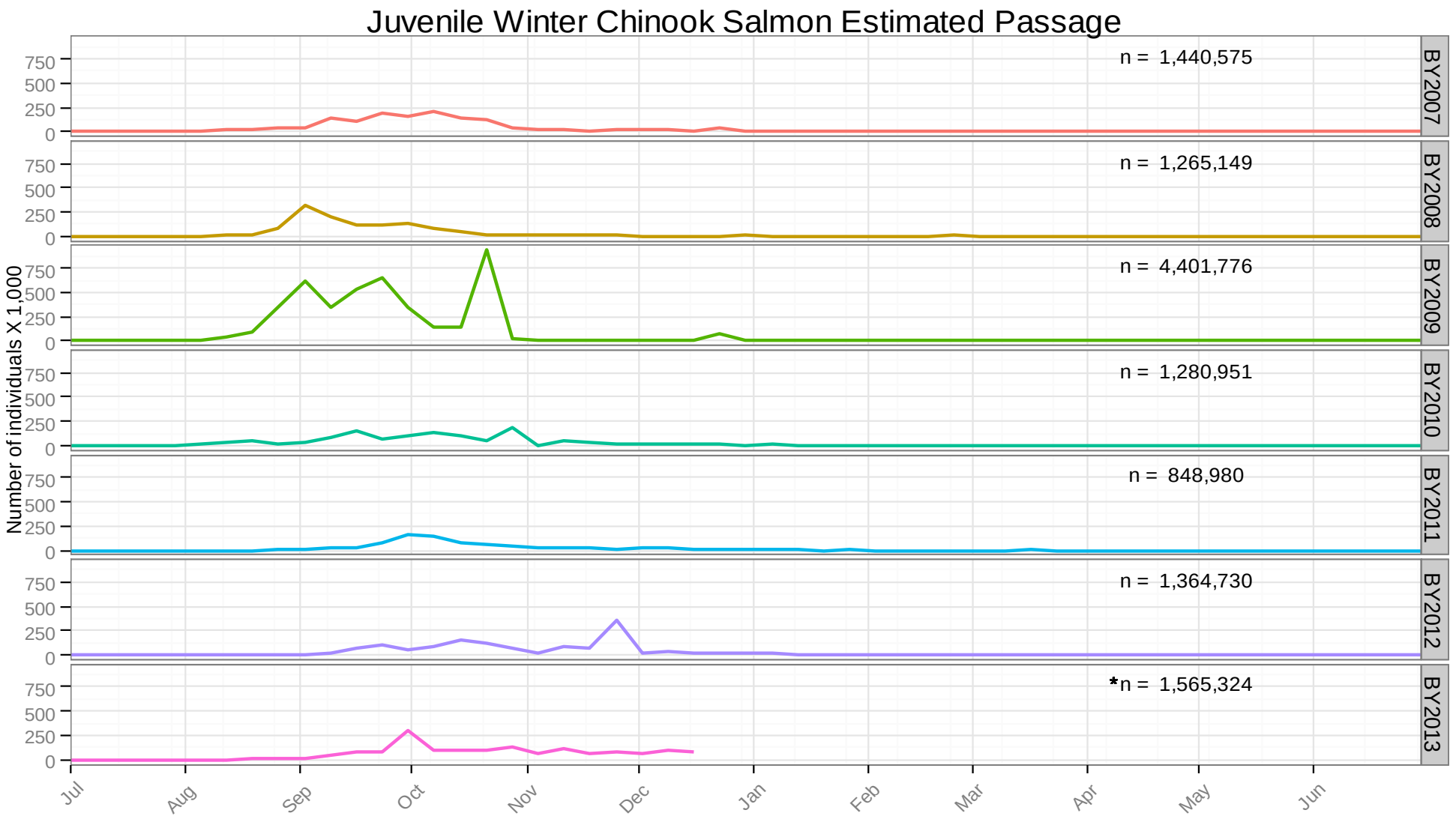


Figure 1. Weekly estimated passage of juvenile winter Chinook Salmon at Red Bluff Diversion Dam (RK391),by brood-year (BY). Fish were sampled using rotary-screw traps for the period July 1, 2007 to present .

*Winter run passage value interpolated using a monthly mean for the period 10/1/13 - 10/17/13 due to government shutdown .

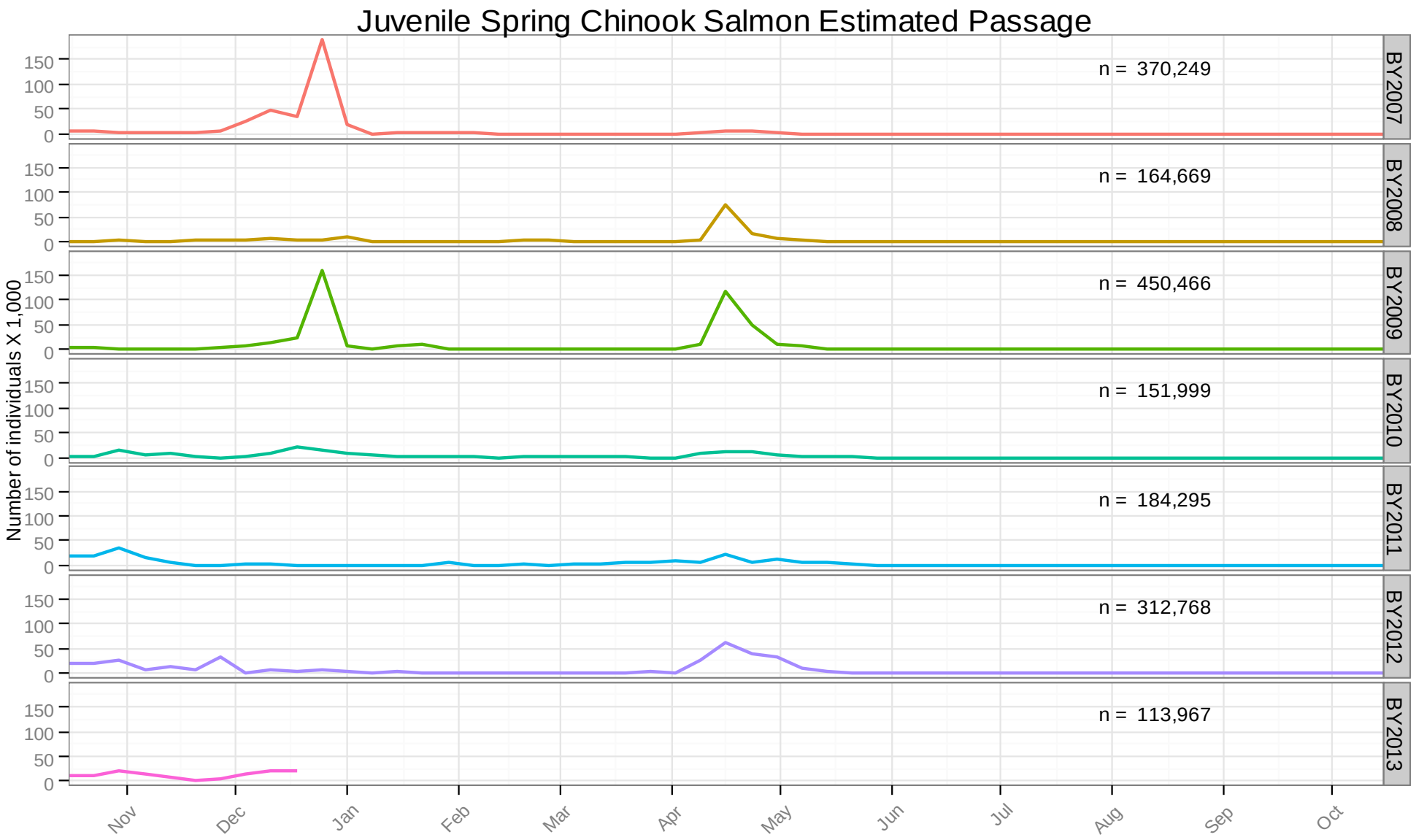


Figure 2. Weekly estimated passage of juvenile Spring Chinook Salmon at Red Bluff Diversion Dam (RK391),by brood-year (BY). Fish were sampled using rotary-screw traps for the period October 16, 2007 to present .

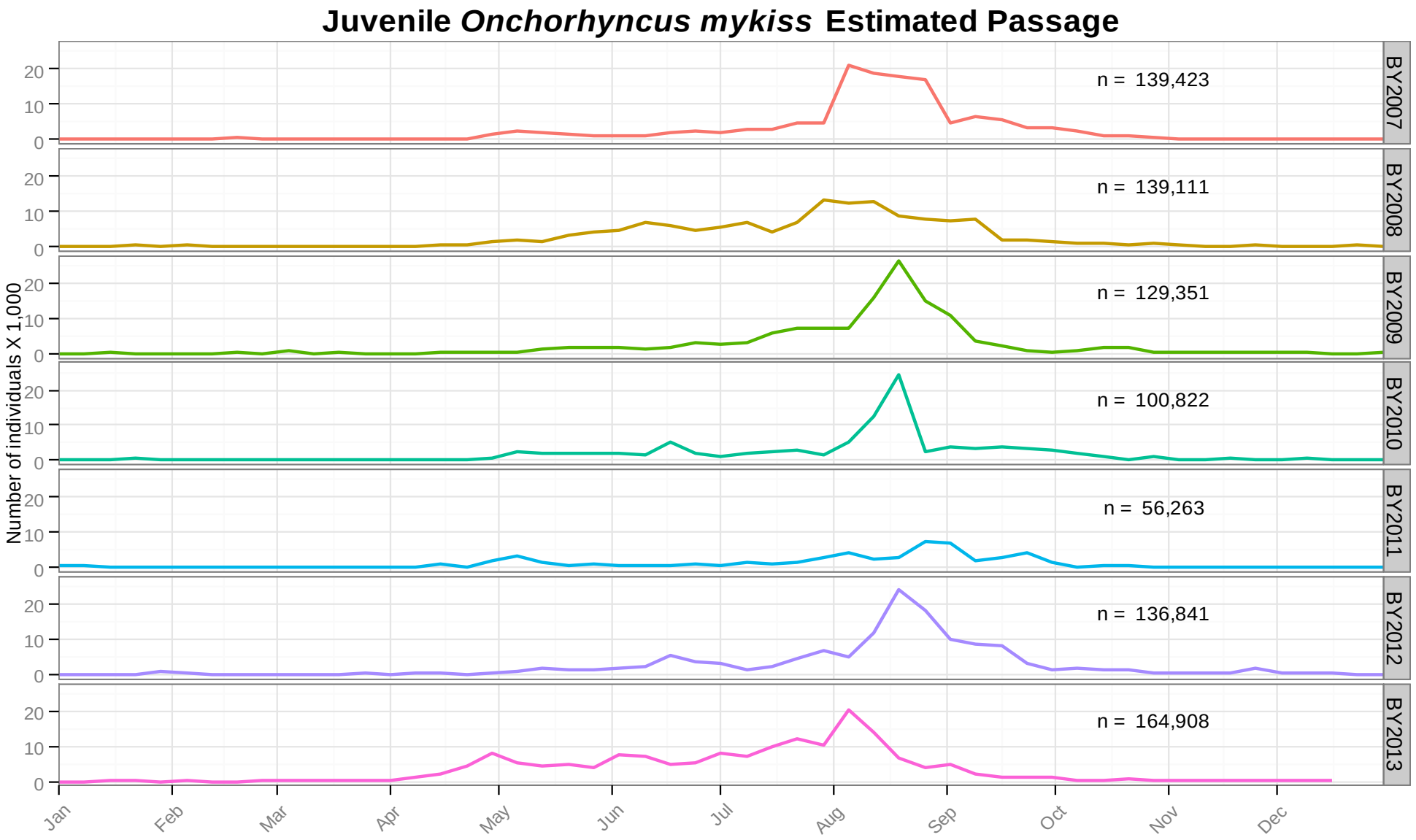


Figure 3. Weekly estimated passage of juvenile Rainbow/Steelhead trout at Red Bluff Diversion Dam (RK391),by brood-year (BY). Fish were sampled using rotary-screw traps for the period January 1, 2007 to present .

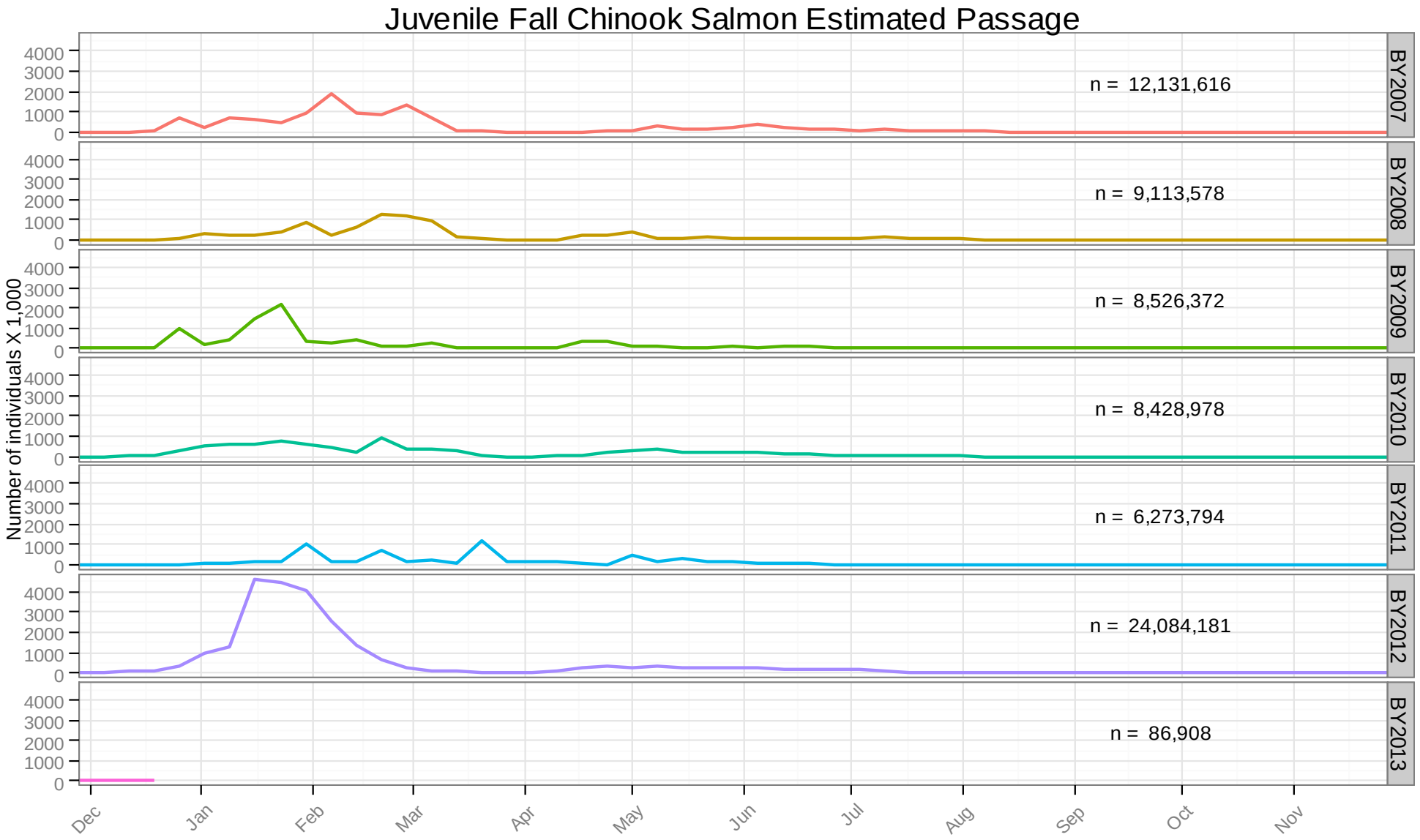


Figure 4. Weekly estimated passage of juvenile Fall Chinook Salmon at Red Bluff Diversion Dam (RK391),by brood-year (BY). Fish were sampled using rotary-screw traps for the period December 1, 2007 to present .

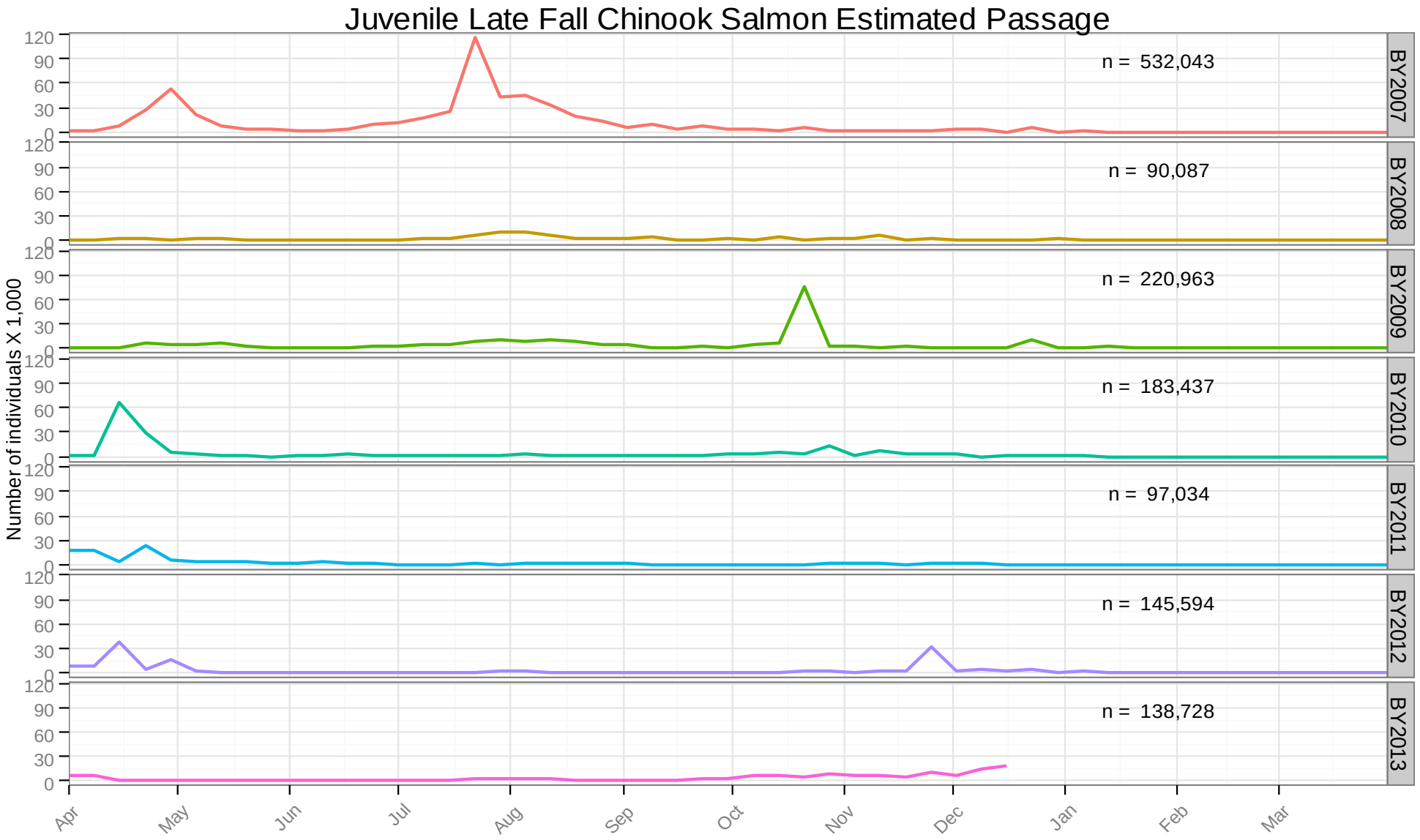


Figure 5. Weekly estimated passage of juvenile Late Fall Chinook Salmon at Red Bluff Diversion Dam (RK391),by brood-year (BY). Fish were sampled using rotary-screw traps for the period April 1, 2007 to present .

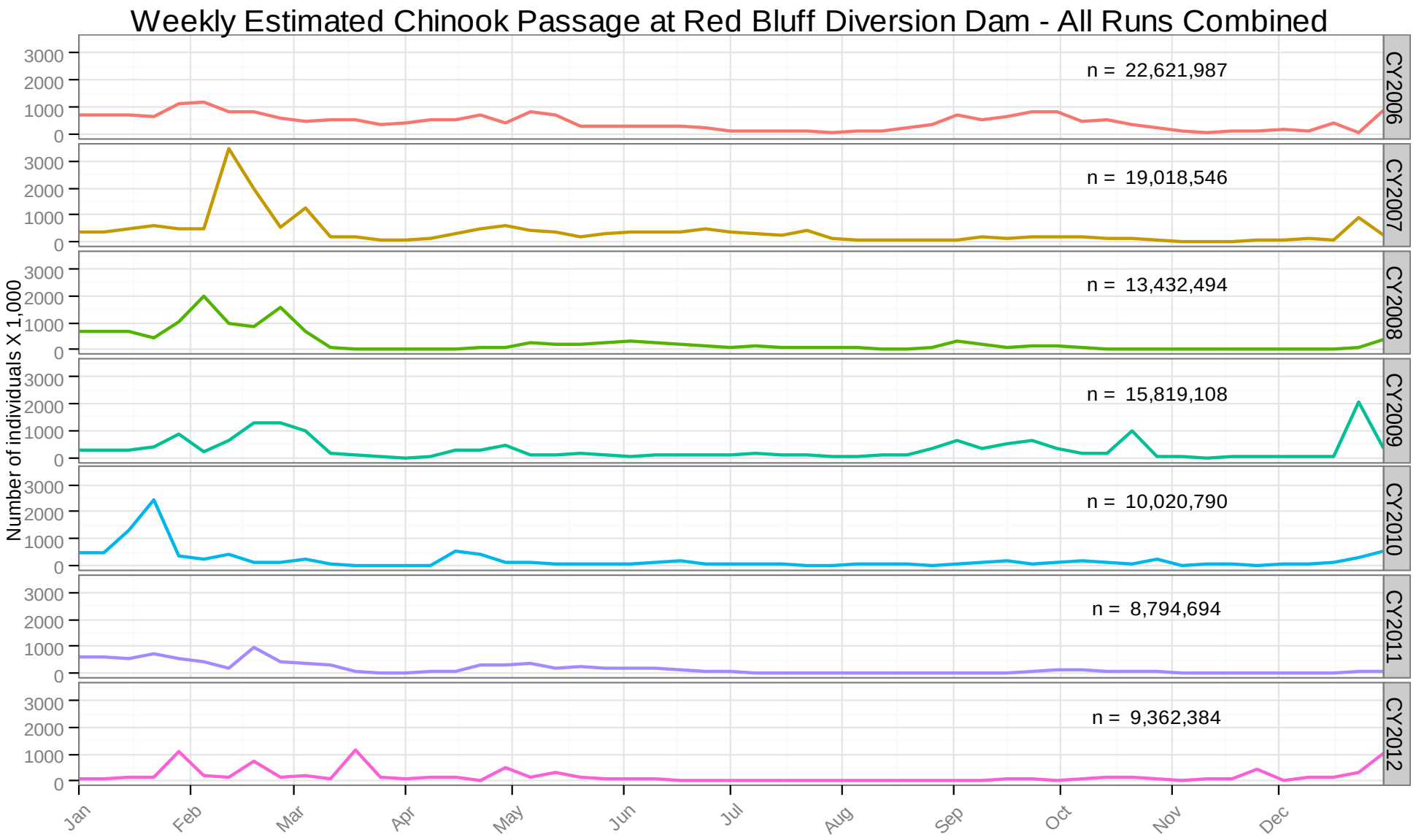


Figure 6. Weekly estimated passage of juvenile Chinook Salmon at Red Bluff Diversion Dam (RK391),by calendar year. Fish were sampled using rotary-screw traps for the period January 1, 2006 to December 31 2012